Commonwealth of Kentucky
Division for Air Quality

PERMIT STATEMENT OF BASIS

DRAFT
Title V / Synthetic Minor, Construction / Operating
Permit: V-08-025
Wild Turkey Distillery
Lawrenceburg, KY 40342
July 9, 2008
Lisa Beckham, Reviewer

SOURCE ID:	21-005-00003
AGENCY INTEREST:	28
ACTIVITY:	APE20080001

SOURCE DESCRIPTION:

On May 6, 2008 Austin, Nichols & Company, Inc. - Wild Turkey Distillery (WTD) submitted an application for the renewal of their Title V permit, V-03-038 R1. Supplemental information was received on July 1, 2008 and the application was considered complete on July 2, 2008. WTD operates a distillery in Anderson County, Kentucky, where bourbon is produced from grains through fermentation and distillation. Grain that has been milled is fed into mash cookers along with water where the grain starches are converted to sugars by heating. The cooked grain/water mixture is fed into fermenter vessels as a batch operation to convert the sugars to alcohol. After an appropriate residence time, the mixture is processed through distillation columns and condensers to separate the alcohol from the mixture. The condensed liquid is put into barrels to be aged. After the appropriate age is reached the bourbon is dumped from the barrels, processed and stored until the product is transported offsite via tanker truck for bottling.

In addition to renewing the current permit, WTD is proposing to construct a new distillery within the existing site. Most of the equipment associated with the proposed distillery will be constructed new and will replace the existing distillery. Some of the process operations, currently part of the existing distillery will remain in operation as part of the proposed distillery (barrel emptying, barrel aging, product storage tanks and the wastewater treatment plant). Two new solid fuel-fired (wood or coal) boilers and one new natural gas-fired boiler will be constructed as part of the new distillery to replace the existing coal-fired and natural gas-fired boilers. The solid fuel-fired boilers do not have the capability to burn both wood and coal. The boilers will initially be configured for wood burning, but if the facility decides to switch to coal the boilers will have to be reconfigured, which would take 2-3 months to complete and required a notification sent the Division's Field Office within 30 days from the decision. Apart from the operations that will be incorporated into the new distillery, the existing distillery will shutdown upon startup of the new distillery operation.

Combined potential emissions from the existing and new distillery operations will cause WTD to exceed the Prevention of Significant Deterioration for Air (PSD) [401 KAR 51:017] threshold for carbon monoxide (CO), sulfur dioxide (SO_2) and nitrogen oxides (NO_X). In order to avoid PSD review, WTD is requesting the following limitations: a wood consumption limitation of 56,800 tons per year for the two proposed solid fuel-fired boilers to limit CO and NO_X emissions, operation of

the natural gas-fired boiler shall serve as a back-up unit only, and operation of a scrubber for the acid gas removal prior to the wet electrostatic precipitator (WESP) on the two solid fuel-fired boilers when combusting coal to limit SO_2 emissions and hydrogen chloride emissions. Additionally, the facility will have source-wide limits on CO, SO_2 and NO_X emissions of 225 tons per year.

WTD is currently a major source for hydrogen chloride, a hazardous air pollutant (HAP). However, the source is proposing taking a limit on HAP emissions to preclude Clean Air Act Section 112 and future applicability of maximum achievable control technology (MACT) standards to the facility. Coal usage shall be limited to 4850 tons per year on the existing boiler and if burning coal on the two solid-fuel fired boilers use of the acid gas scrubber is required. The scrubber will use a caustic sodium hydroxide solution to remove acid gases. WTD will also track HAP emissions when burning wood.

WTD does not intend to operate both distillery operations at the same time, and will schedule the transition period from the existing operation to the new operation during the typical summer shutdown period in August 2009, with a startup of the new distillery in September 2009. The permitted units will not run concurrently, but for compliance purposes the permittee will maintain emission records of the total emission rates for the two operations to demonstrate that the 12-month rolling total emissions remain below the PSD thresholds.

APPLICABLE REGULATIONS:

401 KAR 59:010, New process operations, applicable to an emission unit that commenced on or after July 2, 1975.

401 KAR 59:015, New indirect heat exchangers, applicable to an emissions unit with a capacity of less than 250 MMBtu/hr which commenced on or after April 9, 1972.

40 CFR 60, Subpart Dc, Standards of performance for small industrial-commercial-institutional steam generating units, applies to each steam generating unit commenced after June 8, 1989 that has a maximum design heat input capacity between 10 and 100 MMBtu/hr.

401 KAR 63:010, Fugitive emissions, applicable to each affected facility which emits or may emit fugitive emissions and is not elsewhere subject to an opacity standard within the administrative regulations of the Division for Air Quality

NON-APPLICABLE REGULATIONS:

401 KAR 51:017, Prevention of significant deterioration of air quality. The permittee has taken federally enforceable operating and emission limitations to preclude the applicability of these standards.

Clean Air Act, Section 112(g) and 112 (j). The permittee has taken federally enforceable operating and emission limits to preclude the applicability of these standards.

COMMENTS:

Emission Unit 02, Emission Point 02-001: Fermentation and Distillation

Grain from the mill bins is fed into mash cookers with water. The mixture is heated to convert the grain starches into sugars, a process known as mashing. The cooked grain/water mixture (a mash) is fed into fermenter vessels in a batch operation. Fermentation converts the sugars into ethanol. Fugitive VOC are emitted from the open fermenter vessels during this process (02-001). When fermentation is complete, the mixture is distilled through distillation columns and condensers to separate the alcohol from the mixture. The alcohol is sent to the still tanks for further processing. The mixture of water and grain, called spent stillage, is pumped from the still bottoms to the dry house. All emissions from this process are fugitive.

The existing fermentation and distillation operations will be taken out of service upon start up of the new distillery operations. The proposed distillery will be constructed with new fermentation vessels and distillation equipment (02-101). The capacity of the proposed distillery we be greater than the existing distillery. Each mash will be 470 bushels of grain and the proposed distillery will have the capacity to cook 16 mashes per day. This will the increase in bushel of grain per day by 4020 (existing 3500, new 7520), and increase ethanol production from 6,515,250 pgal/yr to 13,998,480 pgal/yr. Emission from this process increase is fugitive.

Pursuant to 401 KAR 52:020, Section 26, the permittee shall monitor and maintain records of the amount of grains processed (tons) for each emission point on an annual basis.

There are no applicable regulations to this unit because all emissions are fugitive VOC.

Emission Unit 03, Emission Point 03-101: Rotary Dryers

Due to high water content remaining in material for the existing dryhouse operations, the current ring dryer for the dry grain (DDG) has been decommissioned and taken out of service and the stillage is now sent through a centrifuge to achieve a low degree of water removal, and stored for shipment until a new dryhouse is constructed.

The new dryhouse when constructed will process the spent stillage from the new distillery. The spent stillage will first be processed in a centrifuge. The centrate from the centrifuge is concentrated in an evaporator to increase its solids content. This concentrate is then combined with the solid cake from the centrifuge and sent to one of two steam rotary dryers (03-101). The rotary dryers rated at 2.81 tons per hour of dried grains are a source of particulate and VOC emissions and will be equipped with wet scrubbing emission controls. Following the drying operation, the DDG will pass through a rotary air cooling process to reduce the temperature prior to additional handling. The cooler exhaust will be equipped with a dust collector for control of PM emissions (03-102). The resulting DDG is loaded into silos for storage (03-103) then loaded into trucks for shipment off-site (03-104).

Pursuant to 401 KAR 59:010, Section 3(2), particulate emissions from the stack shall not exceed $[3.59(P)^{0.62}]$ pound per hour, based on a three-hour average, where P is the weekly average processing rate in tons per hour. If the process rate weight is 1,000 lbs/hr or less than the limit on particulate matter emissions is 2.34 lbs/hr.

Pursuant to 401 KAR 59:010, Section 3(1)(a), any continuous emissions into the open air shall not exceed twenty (20) percent opacity, based on a six-minute average.

Pursuant to 401 KAR 52:020, Section 26, the permittee shall perform a qualitative visible observation of the opacity emissions from the stack on a weekly basis. If visible emissions from the stack are seen, then the opacity shall be determined by EPA Reference Method 9 and if the opacity reading is greater than 20 percent, then initiate an inspection of the equipment for any repairs (see Section F.7).

Pursuant to 401 KAR 52:020, Section 26, the permittee shall monitor and maintain records of the amount of dried grain processed (tons) and hours of operation on a weekly basis

Emission Unit 04, Emission Point 04-002: Barrel Aging

From the still tanks, the whiskey is filled into barrels (04-001) at one of several filling stations. The barrels are stored in an aging warehouse (04-002) until the desired aging has occurred. Product is removed from the barrels using a vacuum hose (04-003) which conveys the product to storage tanks (the former dump trough operation is no longer in operation). VOC emissions result from each of these operations.

The barrel filling, aging, and emptying operations will each be modified as part of the new distillery operation to accommodate the increase in capacity from the new distillery. The barrel filling operation will be expanded as part of the proposed distillery (04-001). The short-term capacity of equipment is not expected to change, but the annual filling throughput will increase the capacity of the barrel emptying operation (04-003). The short-term throughput will increase due to the construction of an additional emptying station, and the annual throughput will increase to correspond to the proposed distillery capacity. Finally, WTD is proposing construction of additional warehouse capacity (04-002) within the distilling property to provide storage for the increased production of the distillery.

Pursuant to 401 KAR 52:020, Section 26, the permittee shall monitor and maintain records of the number of barrels processed at each location on a yearly basis.

There are no applicable regulations to this unit because all emissions are fugitive VOC.

Emission Unit 05, Emission Points 05-001, 05-002 and 05-104: Storage Tanks and Equipment Leaks

After being emptied from the barrels, the aged bourbon is fed either to the outside processing/bottling tanks (05-001) or the inside processing/bottling tanks (05-002) for intermediate storage. VOC emissions result from the storage tank standing and working losses. The product is then loaded into tanker trucks (05-005) for bulk shipment offsite for bottling at another facility. The former bottling operations (05-003) have been discontinued at WTD.

The throughput of the processing/bottling tanks has decreased from the existing permit representations. WTD formerly received product from off-site for bottling, a practice no longer in operation. The emission estimates included with this application for existing operations is based on the throughputs corresponding to the existing distillery capacity.

Equipment leak fugitive emissions will result from the piping components associated with the new

distillery. A new equipment leak fugitive emission source has been designated in this application (05-104) to account for the component counts comprising the new operations. All emissions from this process are fugitive.

Pursuant to 401 KAR 52:020, Section 26, the permittee shall monitor and maintain records of the proof gallons processed on an annual basis.

There are no applicable regulations to this unit because all emissions are fugitive VOC.

Emission Unit 06, Emission Points 10-001: Indirect Heat Exchanger

A 41.1 MMBtu/hr coal-fired boiler (10-001) provides steam to the existing distillery. Coal is transported from a stockpile (10-003) via bucket elevators (10-004) to the coal silo (10-005), where it is fed to the coal bunker (10-006) before being combusted in the boiler. The coal-fired boiler is equipped with a multicyclone for control of particulate matter.

After the coal is burned, the bottom ash from the boiler and the fly ash collected in the multicyclones are conveyed to an ash silo (10-007). Ash is loaded onto trucks for off-site transport from the ash disposal pile (10-008).

This unit will shutdown and be removed upon startup of the new distillery operation.

To preclude the applicability of CAA, Section 112(j), this unit is limited to 4,850 tons of coal per year, based on a twelve-month rolling total.

Pursuant to 401 KAR 59:015, Section 4(1)(c), particulate matter emissions from this unit shall not exceed 0.32 lb/MMBtu heat input, based on a three-hour average.

Pursuant to 401 KAR 59:015, Section 4(2), visible emissions shall not exceed twenty (20) percent opacity, based on a six-minute average, except:

1. A maximum of forty (40) percent opacity shall be permissible for not more than six (6) consecutive minutes in any sixty (60) consecutive minutes during cleaning the fire box or blowing soot, and

2. For emissions from an indirect heat exchanger during building a new fire for the time period required to bring the boiler up to operating conditions provided the method used is that recommended by the manufacturer and the time does not exceed the manufacturer's recommendations.

Pursuant to 401 KAR 59:015, Section 5(1)(a), sulfur dioxide emission shall not exceed 1.72 lb/MMBtu heat input, based on a twenty-four-hour average.

Pursuant to 401 KAR 50:045, the permittee shall submit a schedule within six months from the issuance of the final permit to conduct at least one performance test for particulate matter (PM)

using EPA Reference Method 5 within eighteen months from the issuance of the final permit.. This performance test shall be conducted while burning a representative fuel.

Pursuant to 401 KAR 52:020, Section 26, the permittee shall perform a qualitative visible observation of the opacity emissions from the stack on a weekly basis. If visible emissions from the stack are seen, then the opacity shall be determined by EPA Reference Method 9 and if the opacity reading is greater than 20 percent, then initiate an inspection of the equipment for any repairs (See Section F.7).

Pursuant to 401 KAR 52:020, Section 26, the permittee shall monitor and maintain records of the hours of operation sulfur content, heat content, and chlorine content of coal, per shipment

Emission Unit 07, Emission Point (10-002): Indirect Heat Exchanger

A 70.2 MMBtu/hr natural gas boiler is also used to supply steam to the existing distillery operations. This unit will shutdown and be removed upon startup of the new distillery operation.

Pursuant to 401 KAR 59:015, Section 4(1)(c), particulate matter emissions from this unit shall not exceed 0.35 lb/MMBtu heat input, based on a three-hour average.

Pursuant to 401 KAR 59:015, Section 4(2), visible emissions shall not exceed twenty (20) percent opacity, based on a six-minute average, except:

1. A maximum of forty (40) percent opacity shall be permissible for not more than six (6) consecutive minutes in any sixty (60) consecutive minutes during cleaning the fire box or blowing soot, and

2. For emission from an indirect heat exchanger during building a new fire for the time period required to bring the boiler up to operating conditions provided the method used is that recommended by the manufacturer and the time does not exceed the manufacturer's recommendations.

Pursuant to 401 KAR 59:015, Section 5(1)(a), sulfur dioxide emissions shall not exceed 1.35 lb/MMBtu heat input, based on a twenty-four-hour average.

Pursuant to 401 KAR 52:020, Section 26, the permittee shall monitor and maintain records of the fuel used on monthly basis.

Emission Units 08 and 09- (Points 10-101 and 10-102): New Indirect Heat Exchangers

Two 65.56 MMBtu/hr solid fuel-fired boilers will supply steam for the new distillery operations. WTD requests that these boilers be permitted to operate under either a wood-firing or coal-firing scenario. Initially, the solid fuel-fired units will be configured to fire a wood fuel source. The fuel handling process will be similar to the existing operation. The solid fuel will first be conveyed (10-104) to a bucket elevator (10-105), which delivers the fuel to a storage silo (10-106). From the silo, the fuel will be fed to the boiler (10-107) for combustion.
PM emissions will be controlled by multicyclones and a WESP. SO2 and HCl emissions during coal burning will be controlled by an acid gas scrubber prior to the WESP.

Ash generated from the solid fuel combustion will pass through a water quenching process. The water content of the material is expected to be sufficiently high that PM emissions are not expected from wetted ash storage and shipment off-site.

To preclude the applicability of 401 KAR 51:017, the amount of wood burned shall not exceed 56,800 tons per year, based on a twelve-month rolling total.

To preclude the applicability of 401 KAR 51:017 and CAA Section 112(g), the WESP acid gas removal system shall be operated when burning coal.

The following limitations apply when burning either wood or coal:
Pursuant to §60.43c (a), the permittee shall not cause to be discharged into the atmosphere any gases that contain PM in excess of 0.030 lb/MMBtu heat input, for each unit.

Pursuant to §60.43c (c), the permittee shall not cause to be discharged into the atmosphere any gases that exhibit greater than 20 percent opacity (6-minute average), except for one 6-minute period per hour of not more than 27 percent opacity.

Pursuant to §60.43c (d), the PM and opacity standards apply at all times, except during periods of startup, shutdown, or malfunction.

The following limitations apply only when burning wood:
Pursuant to 401 KAR 59:015, Section 5(1)(a), sulfur dioxide emissions shall not exceed 1.2 lb/MMBtu heat input, based on a twenty-four-hour average, for each unit.

The following limitations apply only when burning coal:
Pursuant to §60.42c (a), the permittee shall not cause to be discharged into the atmosphere any gases than contain SO_2 in excess of 1.2 lb/MMBtu heat input, based on a 30-day rolling average.

Pursuant to §60.42c (i), the SO_2 emission limit applies at all times, including periods of startup, shutdown, and malfunction.

The following testing requirements only apply when burning wood:
Pursuant to §60.45c, within 180 days after initial startup of the units, the permittee shall conduct a performance test for each unit for PM emissions, using EPA Reference Method 5B or 17, according to the methods and procedures in §60.45c (a)(1)-(8). This performance test shall not be performed concurrently with both emission units 09 and 10 running, and the testing shall be conducted under conditions representative of maximum emissions potential under anticipated operating conditions at the pollutant-specific emissions unit.

Pursuant to 401 KAR 50:045, within 180 days after initial startup of the units, the permittee shall conduct a performance test for CO emissions using EPA Reference Method 10. This performance test shall not be performed concurrently with both emission units 09 and 10 running, and the testing shall be conducted under conditions representative of maximum emissions potential under anticipated operating conditions at the pollutant-specific emissions unit.

The following testing requirements only apply when burning coal:

Pursuant to §60.44c (a), within 30 days after achieving the maximum production rate but no later than 180 days after the initial startup of the units, the permittee shall conduct a performance test for each unit for SO_2 emissions according to the methods and procedures in §60.45c (b)-(f), as applicable.

Pursuant to §60.45c, within 180 days after initial startup of the units, the permittee shall conduct a performance test for each unit for PM emissions according to the methods and procedures in §60.45c (a)(1)-(8). This performance test shall not be performed concurrently with both emission units 09 and 10 running, the testing shall be conducted under conditions representative of maximum emissions potential under anticipated operating conditions at the pollutant-specific emissions unit.

Pursuant to 401 KAR 50:045, within 180 days after initial startup of the units the permittee shall conduct a performance test for hydrogen chloride emissions, using EPA Reference Method 26. This performance test shall not be performed concurrently with both emission units 09 and 10 running, and the testing shall be conducted under conditions representative of maximum emissions potential under anticipated operating conditions at the pollutant-specific emissions unit.

The following monitoring requirements apply when burning either wood or coal:
Pursuant to §60.47c (a), the owner or operator shall install, calibrate, maintain, and operate a COMS for measuring the opacity of the emissions discharged to the atmosphere and record the output of the system.

Pursuant to §60.47c (b), all COMS for measuring opacity shall be operated in accordance with the applicable procedures under Performance Specification 1 of appendix B to 40 CFR 60. The span value of the opacity COMS shall be between 60 and 80 percent.

Pursuant to 401 KAR 52:020, Section 26, the permittee shall monitor and maintain records of the primary amperage, primary voltage and sparks per minute of the WESP on an hourly basis.

The following monitoring requirements apply only when burning wood:
Pursuant to 401 KAR 52:020, Section 26, the permittee shall monitor the heat content (lb/MMBtu) and moisture content (percent) of each shipment of wood.

Pursuant to §60.48c (g)(2), the permittee shall monitor and maintain records of the amount of fuel combusted during each calendar month, for each unit.

The following monitoring requirements apply only when burning coal:
Pursuant to §60.48c (g)(1), the permittee shall monitor and maintain records of the amount of coal combusted during each operating day, for each unit.
Pursuant to §60.46c (a), the permittee shall install, calibrate, maintain, and operate a CEMS for measuring SO_2 concentrations and either O_2 or CO_2 concentrations at the outlet of the SO_2 control device, and shall record the output of the system.

Pursuant to §60.46c (b), the 1-hour average SO_2 emission rates measure by a CEMS shall be expressed in ng/J or lb/MMBtu heat input and shall be used to calculate the average emission rates under 40 CFR 60.42c. Each 1-hour average SO_2 emission rate must be based on at least 30 minutes of operation, and shall be calculated using the data point required under §60.13(h)(2). Hourly SO_2

emission rates are not calculated if the affected facility is operated less than 30 minutes in a 1-hour period and are not counted toward determination of a steam generating unit operating day.

Pursuant to 401 KAR 52:020, Section 26, the permittee shall monitor and maintain record of the heat content (lb/MMBtu), sulfur content (percent by weight) and chlorine content (percent by weight) of each shipment of coal.

Pursuant to 401 KAR 52:020, Section 26, the permittee shall monitor and maintain records of the pH of the scrubbing liquid and the scrubbing liquid flow rate (gal/min) of the acid gas scrubber on an hourly basis.

Emission Unit 10 -(Point 10-103): New Indirect Heat Exchanger

A 49.31 MMBtu/hr natural gas boiler will operate as a backup unit for the two solid fuel-fired boilers.

This unit shall only operate as a backup unit and shall not operate simultaneously when Emission Unit 08 and/or Emission Unit 09 are operating.

Pursuant to 401 KAR 59:015, Section 4(1)(c), particulate matter emissions from this unit shall not exceed 0.35 lb/MMBtu heat input, based on a three-hour average.

Pursuant to 401 KAR 59:015, Section 4(2), visible emissions shall not exceed twenty (20) percent opacity, based on a six-minute average, except:

1. A maximum of forty (40) percent opacity shall be permissible for not more than six (6) consecutive minutes in any sixty (60) consecutive minutes during cleaning the fire box or blowing soot, and

2. For emission from an indirect heat exchanger during building a new fire for the time period required to bring the boiler up to operating conditions provided the method used is that recommended by the manufacturer and the time does not exceed the manufacturer's recommendations.

Pursuant to 401 KAR 59:015, Section 5(1)(a), sulfur dioxide emissions shall not exceed 1.2 lb/MMBtu heat input, based on a twenty-four-hour average.

Pursuant to 401 KAR 52:020, Section 26, the permittee shall monitor and maintain records of natural gas usage (scf) on a monthly basis.

Emission Unit 11, Emission Point 13-101: Cooling Tower

A 210,300 gallon/hr cooling tower will serve the new distillery operations.

Pursuant to 401 KAR 63:020, Section 3(1), the permittee shall not cause, suffer, or allow any material to be handled, processed, transported, or stored; a building or its appurtenances to be constructed, altered, repaired, or demolished, or a road to be used without taking reasonable precaution to prevent particulate matter from becoming airborne.

Pursuant to 401 KAR 63:010, Section 3(2), the permittee shall not cause or permit discharge of

fugitive dust emissions beyond the property line.

SOURCE EMISSION AND OPERATING CAPS DESCRIPTION:

To preclude the applicability of 401 KAR 51:017, Prevention of Significant Deterioration of Air Quality, total source-wide emissions of sulfur dioxide shall not exceed 225 tons per year based on a twelve month rolling total.

To preclude the applicability of 401 KAR 51:017, Prevention of Significant Deterioration of Air Quality, total source-wide emissions of carbon monoxide shall not exceed 225 tons per year based on a twelve month rolling total.

To preclude the applicability of 401 KAR 51:017, Prevention of Significant Deterioration of Air Quality, total source-wide emissions of nitrogen oxides shall not exceed 225 tons per year based on a twelve month rolling total.

To preclude the applicability of CAA Section 112, source-wide emissions of a single Hazardous Air Pollutant (HAP), hydrogen chloride, shall not exceed 9.0 tons per year based on a twelve-month rolling total.

CREDIBLE EVIDENCE:

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has only adopted the provisions of 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12 into its air quality regulations.